ISSN 1351-0754

European Journal of Soil Science

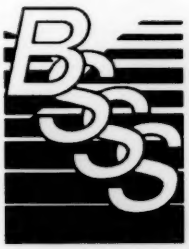
VOLUME 51

2000

Edited by

R. Webster

Rothamsted Experimental Station
Harpenden
Herts AL5 2JQ
UK



Published by Blackwell Science
and the British Society of Soil Science
on behalf of National Societies of Soil Science in Europe

Published by Blackwell Science Ltd

Editorial Offices:

Osney Mead, Oxford OX2 0EL, UK

25 John Street, London WC1N 2BL, UK

23 Ainslie Place, Edinburgh EH3 6AJ, UK

Blackwell Science Inc.
Commerce Place, 350 Main Street, Malden, MA 02148-5018, USA

Blackwell Science Asia
54 University Street, Carlton South, Victoria 3053, Australia

Blackwell Wissenschafts-Verlag GmbH
Kurfürstendamm 57, 10707 Berlin, Germany

Blackwell Science KK
MG-Kodenmacho Building, 7–10 Kodenmacho Nihombashi, Chuo-ku, Tokyo 103-0001, Japan

Blackwell Science France
10 rue Casimir Delavigne, 75006 Paris, France

Copyright. © 2000 Blackwell Science Ltd. Authorization to photocopy items for internal use or the internal or personal use of specific clients is granted by Blackwell Science Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of $15.00 per copy is paid directly to the CCC, 222 Rosewood Drive, Suite 910, Danvers, MA 01923, USA. This consent does not extend to other kinds of copying, such as copying for general distribution for advertising or promotional purposes, for creating new collective works or for resale. Special requests should be addressed to the Editor, 1351-0754/00 $15.00. Copyright of all articles published in the journal is held by Blackwell Science Ltd on behalf of the British Society of Soil Science.

ISSN 1351-0754

The Blackwell Science logo is a trade mark of Blackwell Science Ltd registered at the United Kingdom Trade Marks Registry

Printed by Information Press, Eynsham, Oxford, UK

Contents

Number 1 March

V. Brahy, J. Deckers & B. Delvaux. Estimation of soil weathering stage and acid neutralizing capacity in a toposequence Luvisol–Cambisol on loess under deciduous forest in Belgium 1

V. Brahy, H. Titeux, A. Iserentant & B. Delvaux. Surface podzolization in Cambisols under deciduous forest in the Belgian loess belt 15

G. A. van den Berg & J. P. G. Loch. Decalcification of soils subject to periodic waterlogging 27

G. Yuan, B. K. G. Theng, R. L. Parfitt & H. J. Percival. Interactions of allophane with humic acid and cations 35

P. Benoit & C. M. Preston. Transformation and binding of ^{13}C and ^{14}C-labelled atrazine in relation to straw decomposition in soil 43

N. R. A. Bird, E. Perrier & M. Rieu. The water retention function for a model of soil structure with pore and solid fractal distributions 55

D. M. W. Peat, G. P. Matthews, P. J. Worsfold & S. C. Jarvis. Simulation of water retention and hydraulic conductivity in soil using a three-dimensional network 65

R. Kasteel, H.-J. Vogel & K. Roth. From local hydraulic properties to effective transport in soil 81

A. Joel & I. Messing. Application of two methods to determine hydraulic conductivity with disc permeameters on sloping land 93

H. J. Vogel. A numerical experiment on pore size, pore connectivity, water retention, permeability, and solute transport using network models 99

M. B. Rayment. Closed chamber systems underestimate soil CO_2 efflux 107

F. Conen & K. A. Smith. An explanation of linear increases in gas concentration under closed chambers used to measure gas exchange between soil and the atmosphere 111

D. J. Kim, S. I. Choi, O. Ryszard, J. Feyen & H. S. Kim. Determination of moisture content in a deformable soil using time-domain reflectometry (TDR) 119

S. D. Young, A. Tye, A. Carstensen, L. Resende & N. Crout. Methods for determining labile cadmium and zinc in soil 129

R. M. Lark. A comparison of some robust estimators of the variogram for use in soil survey 137

D. J. Brus. Using regression models in design-based estimation of spatial means of soil properties 159

Book reviews 173

Letter to the Editor 183

Number 2 June

L. Cole, R. D. Bardgett & P. Ineson. Enchytraeid worms (Oligochaeta) enhance mineralization of carbon in organic upland soils 185

M. D. Busto & M. Perez-Mateos. Characterization of β-D-glucosidase extracted from soil fractions 193

E. Gimeno-García, V. Andreu & J. L. Rubio. Changes in organic matter, nitrogen, phosphorus and cations in soil as a result of fire and water erosion in a Mediterranean landscape 201

Y. Hiraiwa & T. Kasubuchi. Temperature dependence of thermal conductivity of soil over a wide range of temperature (5–75°C) 211

G. Schroth, R. Seixas, L. F. da Silva, W. G. Teixeira & W. Zech. Nutrient concentrations and acidity in ferralitic soil under perennial cropping, fallow and primary forest in central Amazonia 219

A. D. Noble, G. P. Gillman & S. Ruaysoongnern. A cation exchange index for assessing degradation of acid soil by further acidification under permanent agriculture in the tropics 233

H. J. van Praag, F. De Smedt & T. vu Thanh. Simulation of calcium leaching and desorption in an acid forest soil 245

© 2000 Blackwell Science Ltd

C. Hénault & J. C. Germon. NEMIS, a predictive model of denitrification on the field scale 257

S. Parry, P. Renault, J. Chadœuf, C. Chenu & R. Lensi. Particulate organic matter as a source of variation in denitrification in clods of soil 271

J. Six, R. Merckx, K. Kimpe, K. Paustian & E. T. Elliott. A re-evaluation of the enriched labile soil organic matter fraction 283

S. De Neve, J. Van de Steene, R. Hartmann & G. Hofman. Using time domain reflectometry for monitoring mineralization of nitrogen from soil organic matter 295

C. W. Watts, W. R. Whalley, N. R. A. Bird & M. R. Ashman. The effect of iron concentration, hindered settling, saturating cation and aggregate density of clays on the size distribution determined by gravitation X-ray sedimentometry 305

I. Forrer, A. Papritz, R. Kasteel, H. Flühler & D. Luca. Quantifying dye tracers in soil profiles by image processing 313

J. Prietzel & C. Hirsch. Ammonium fluoride extraction for determining inorganic sulphur in acid forest soils 323

Q. Wu, H.-P. Blume, L. Rexilius, M. Fölschow & U. Schleuss. Sorption of atrazine, 2,4-D, nitrobenzene and pentachlorophenol by urban and industrial wastes 335

L. Blake, K. W. T. Goulding, C. J. B. Mott & P. R. Poulton. Temporal changes in chemical properties of air-dried stored soils and their interpretation for long-term experiments 345

P. M. Biesheuvel, A. P. van Loon, R. Raangs, H. Verweij & C. Dirksen. A prototype osmotic tensiometer with polymeric gel grains 355

Letter to the Editor 365

Referees for the European Journal of Soil Science, 1999 367

Number 3 September

H. Yao & R. Conrad. Electron balance during steady-state production of CH_4 and CO_2 in anoxic rice soil 369

N. Mahieu, D. C. Olk & E. W. Randall. Accumulation of heterocyclic nitrogen in humified organic matter: a ^{15}N-NMR study of lowland rice soils 379

N. Mahieu, D. C. Olk & E. W. Randall. Analysis of phosphorus in two humic acid fractions of intensively cropped lowland rice soils by ^{31}P-NMR 391

K. Kaiser & W. Zech. Sorption of dissolved organic nitrogen by acid subsoil horizons and individual mineral phases 403

A. Simojoki & A. Jaakkola. Effect of nitrogen fertilization, cropping and irrigation on soil air composition and nitrous oxide emission in a loamy clay 413

C. Grelle, M.-C. Fabre, A. Leprêtre & M. Descamps. Myriapod and isopod communities in soils contaminated by heavy metals in northern France 425

S. Czarnes, P. D. Hallett, A. G. Bengough & I. M. Young. Root- and microbial-derived mucilages affect soil structure and water transport 435

R. Roscoe, P. Buurman & E. J. Velthorst. Disruption of soil aggregates by varied amounts of ultrasonic energy in fractionation of organic matter of a clay Latosol: carbon, nitrogen and δ^{13}C distribution in particle-size fractions 445

J. Roger-Estrade, G. Richard, H. Boizard, J. Boiffin, J. Caneill & H. Manichon. Modelling structural changes in tilled topsoil over time as a function of cropping systems 455

V. Brahy, H. Titeux & B. Delvaux. Incipient podzolization and weathering caused by complexation in a forest Cambisol on loess as revealed by a soil solution study 475

B. Barthès, A. Azontonde, B. Z. Boli, C. Prat & E. Roose. Field-scale run-off and erosion in relation to topsoil aggregate stability in three tropical regions (Benin, Cameroon, Mexico) 485

M. V. Cheshire, C. Dumat, A. R. Fraser, S. Hillier & S. Staunton. The interaction between soil organic matter and soil clay minerals by selective removal and controlled addition of organic matter 497

V. Uygur & D. L. Rimmer. Reactions of zinc with iron-oxide coated calcite surfaces at alkaline pH 511

H. S. Yang & B. H. Janssen. A mono-component model of carbon mineralization with a dynamic rate constant 517

© 2000 Blackwell Science Ltd

N. J. BARROW, H. C. B. HANSEN, P. E. HANSEN & J. MAGID. A note on the description of the kinetics of phosphate sorption 531

LETTERS TO THE EDITOR 537

BOOK REVIEWS 541

ATTRIBUTION AND CORRECTIONS 551

Number 4 December

L. CANER, G. BOURGEON, F. TOUTAIN & A. J. HERBILLON. Characteristics of non-allophanic Andisols derived from low-activity clay regoliths in the Nilgiri Hills (Southern India) 553

H. FRITZE, J. PIETIKÄINEN & T. PENNANEN. Distribution of microbial biomass and phospholipid fatty acids in Podzol profiles under coniferous forest 565

O. TRAORÉ, V. GROLEAU-RENAUD, S. PLANTUREUX, A. TUBEILEH & V. BŒUF-TREMBLAY. Effect of root mucilage and modelled root exudates on soil structure 575

R. SPACCINI, A. PICCOLO, G. HABERHAUER & M. H. GERZABEK. Transformation of organic matter from maize residues into labile and humic fractions of three European soils as revealed by ^{13}C distribution and CPMAS-NMR spectra 583

P. PUGET, C. CHENU & J. BALESDENT. Dynamics of soil organic matter associated with particle-size fractions of water-stable aggregates 595

B. C. BALL, G. W. HORGAN & J. P. PARKER. Short-range spatial variation of nitrous oxide fluxes in relation to compaction and straw residues 607

I. CHRISTL, H. KNICKER, I. KÖGEL-KNABNER & R. KRETZSCHMAR. Chemical heterogeneity of humic substances: characterization of size fractions obtained by hollow-fibre ultrafiltration 617

J. ROMANYÀ, J. CORTINA, P. FALLOON, K. COLEMAN & P. SMITH. Modelling changes in soil organic matter after planting fast-growing *Pinus radiata* on Mediterranean agricultural soils 627

P. R. DARRAH & S. STAUNTON. A mathematical model of root uptake of cations incorporating root turnover, distribution within the plant, and recycling of absorbed species 643

M. SIMONSSON. Interactions of aluminium and fulvic acid in moderately acid solutions: stoichiometry of the H^+/Al^{3+} exchange 655

D. HONGVE, P. A. W. VAN HEES & U. S. LUNDSTRÖM. Dissolved components in precipitation water percolated through forest litter 667

A. BRUAND & D. TESSIER. Water retention properties of the clay in soils developed on clayey sediments: significance of parent material and soil history 679

J.-C. MICHEL, A. BEAUMONT & D. TESSIER. A laboratory method for measuring the isotropic character of soil swelling 689

D. SOLOMON & J. LEHMANN. Loss of phosphorus from soil in semi-arid northern Tanzania as a result of cropping: evidence from sequential extraction and ^{31}P-NMR spectroscopy 699

A. SCHNEIDER & C. MOREL. Relationship between the isotopically exchangeable and resin-extractable phosphate of deficient to heavily fertilized soil 709

R. M. LARK. Estimating variograms of soil properties by the method-of-moments and maximum likelihood 717

AUTHOR INDEX 729

SUBJECT INDEX 732

© 2000 Blackwell Science Ltd